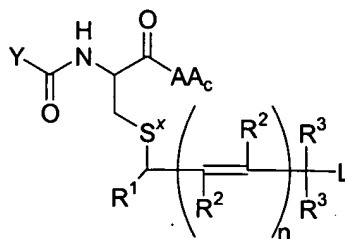


WE CLAIM:

1. A method of combination cancer therapy in a mammal comprising administering a therapeutically effective amount of a GST-activated anticancer compound and a therapeutically effective amount of another anticancer therapy.
2. The method of claim 1 where the mammal is a human.
3. The method of claim 1 or 2 where the GST-activated anticancer compound is a compound of the formula



or an amide, ester, or salt thereof, where:

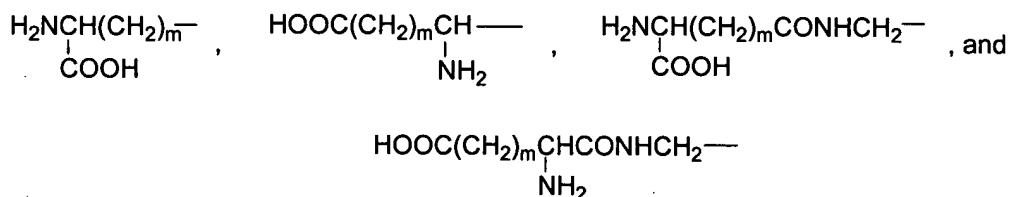
L is a cytotoxic electron withdrawing leaving group;

S^x is -S(=O)-, -S(=O)₂-, -S(=NH)-, -S(=O)(=NH)-, -S⁺(C₁-C₆ alkyl)-, -Se(=O)-, -Se(=O)₂-, -Se(=NH)-, or -Se(=O)(=NH)-, or is -O-C(=O)-, or -HN-C(=O)-;

each of R¹, R² and R³ is independently H or a non-interfering substituent;

n is 0, 1 or 2;

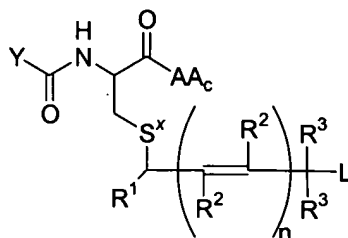
Y is selected from the group consisting of



where m is 1 or 2; and

AA_c is an amino acid linked through a peptide bond to the remainder of the compound.

4. The method of claim 3 where the GST-activated anticancer compound is a compound of the formula



or an amide, ester, or salt thereof, where:

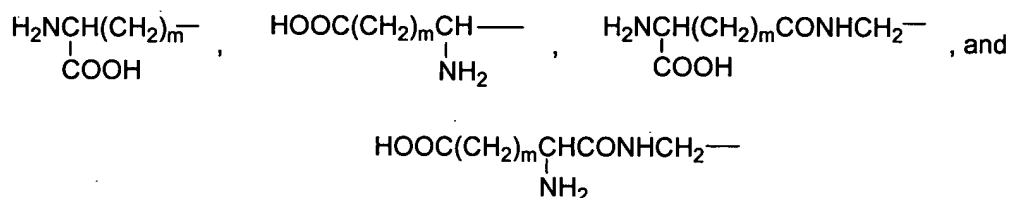
L is a cytotoxic electron withdrawing leaving group;

S^x is -S(=O)-, -S(=O)₂-, -S(=NH)-, -S(=O)(=NH)-, -S⁺(C₁-C₆ alkyl)-, -Se(=O)-, -Se(=O)₂-, -Se(=NH)-, or -Se(=O)(=NH)-, or is -O-C(=O)-, or -HN-C(=O)-;

each of R¹, R² and R³ is independently H, optionally substituted C₁-C₆ alkyl, optionally substituted C₆-C₁₂ aryl, optionally substituted C₇-C₁₂ aralkyl, cyano, halo, optionally substituted C₁-C₆ alkoxy, optionally substituted C₆-C₁₂ aryloxy, or optionally substituted C₇-C₁₂ aralkoxy, where the substituents may be halo, -OR, -SR; and -NR₂, where R is H or C₁-C₄ alkyl;

n is 0, 1 or 2;

Y is selected from the group consisting of



where m is 1 or 2; and

AA_c is an amino acid linked through a peptide bond to the remainder of the compound.

5. The method of claims 3 or 4 where:

L is a toxin, a linkable anticancer agent, or a phosphoramidate or phosphorodiamidate mustard; and/or

S^x is O=S=O; and/or

R¹ is H, C₁-C₄ alkyl, or phenyl; and/or

each R² is independently chosen from H and C₁-C₆ alkyl; and/or

each R³ is independently chosen from H, C₁-C₄ alkyl, and phenyl; and/or

n is 0; and/or

Y-C(=O)- is γ-glutamyl, β-aspartyl, glutamyl, aspartyl, β-glutamylglycyl, β-aspartylglycyl, glutamylglycyl,

or aspartylglycyl; and/or

AA_c is glycine, phenylglycine, β-alanine, alanine, phenylalanine, valine, 4-aminobutyric acid, aspartic acid, histidine, tryptophan, and tyrosine, as either the (S)- or (R)-isomers, optionally substituted on the phenyl ring as described above for R¹ through R³.

6. The method of claim 5 where:

L is a phosphorodiamidate mustard of the formula -OP(=O)(NHCH₂CH₂X)₂ or

-OP(=O)(N(CH₂CH₂X)₂), where X is Cl or Br;

each R¹, R², and R³ is H;

Y-C(=O)- is γ-glutamyl;

AA_c is glycine, phenylglycine, β-alanine, alanine, or phenylalanine.

7. The method of claim 6 where:

L is -OP(=O)(N(CH₂CH₂Cl)₂); and

AA_c is (R)-phenylglycine.

8. The method of claim 7 where the GST-activated anticancer compound is canglustratide or a salt thereof.

9. The method of claim 8 where the GST-activated anticancer compound is canglustratide hydrochloride.

10. The method of any one of claims 1 to 9 where the another anticancer therapy is selected from one or more of chemotherapy, molecular targeted therapy, biologic therapy, and radiotherapy.

11. The method of claim 10 where the another anticancer therapy is administration of one or more of an alkylating agent, an antimetabolite, a natural product, a hormone or hormone antagonist, a miscellaneous agent, a functional therapeutic agent, a gene therapy agent, an antisense therapy agent, a tyrosine kinase inhibitor, a gene expression modulator, a phenotype-directed therapy agent, a monoclonal antibody, an immunotoxin, a radioimmunoconjugate, a cancer vaccine, an interferon, and an interleukin.

12. The method of claim 11 where the another anticancer therapy is administration of one or more of busulfan, thiotepea, chlorambucil, cyclophosphamide, estramustine, ifosfamide, mechlorethamine, melphalan, uramustine, carmustine, lomustine, streptozocin, dacarbazine, procarbazine, temozolamide, cisplatin, carboplatin, oxaliplatin, satraplatin, (SP-4-3)-(α)-amminedichloro-[2-methylpyridine]-

platinum(II), methotrexate, perimetrexed, raltitrexed, trimetrexate, cladribine, chlorodeoxyadenosine, clofarabine, fludarabine, mercaptopurine, pentostatin, thioguanine, azacitidine, capecitabine, cytarabine, edatrexate, floxuridine, fluorouracil, gemcitabine, troxacitabine, bleomycin, dactinomycin, mithramycin, mitomycin, mitoxantrone, porfiromycin, daunorubicin, doxorubicin, liposomal doxorubicin, epirubicin, idarubicin, valrubicin, L-asparaginase, PEG-L-asparaginase, paclitaxel, docetaxel, vinblastine, vincristine, vindesine, vinorelbine, irinotecan, topotecan, amsacrine, etoposide, teniposide, fluoxymesterone, testolactone, bicalutamide, cyproterone, flutamide, nilutamide, aminoglutethimide, anastrozole, exemestane, formestane, letrozole, dexamethasone, prednisone, diethylstilbestrol, fulvestrant, raloxifene, tamoxifen, toremifene, buserelin, goserelin, leuprolide, triptorelin, medroxyprogesterone acetate, megestrol acetate, levothyroxine, liothyronine, altretamine, arsenic trioxide, gallium nitrate, hydroxyurea, levamisole, mitotane, octreotide, procarbazine, suramin, thalidomide, methoxsalen, sodium porfimer, bortezomib, erlotinib hydrochloride, gefitinib, imatinib mesylate, semaxanib, adapalene, bexarotene, *trans*-retinoic acid, 9-*cis*-retinoic acid, and N-(4-hydroxyphenyl)retinamide, alemtuzumab, bevacizumab, cetuximab, ibritumomab tiuxetan, rituximab, trastuzumab, gemtuzumab ozogamicin, ¹³¹I-tositumomab, interferon- α_{2a} , interferon- α_{2b} , aldesleukin, denileukin diftitox, and oprelvekin.

13. The method of claim 11 where the another anticancer therapy is administration of: a platinum compound, optionally in further combination with gemcitabine or a taxane; gemcitabine; a taxane; an anthracycline; oxaliplatin, optionally in further combination with capecitabine or fluorouracil/leucovorin; and gemcitabine or a platinum compound, in further combination with a vinca alkaloid.

14. The method of claim 11 where the another anticancer therapy is administration of two or more of chemotherapy; molecular targeted therapy; biologic therapy; and radiotherapy.

15. The method of claim 11 where the another anticancer therapy is administration of two or more chemotherapy agents.

16. The method of claim 10 where the another anticancer therapy includes radiation therapy.

17. The method of claim 15 where the another anticancer therapy is radiation therapy.

18. The method of claim 1 where the dosing of the GST-activated anticancer compound is about 60 - 1280 mg/m² body surface area, especially 500 - 1000 mg/m², at 1 - 35 day intervals.

19. The method of claim 18 where the dosing is about 500 - 1000 mg/m² at 1 - 5 week intervals, especially at 1, 2, 3, or 4 week intervals.
20. The method of claim 19 where the GST-activated anticancer compound is canglustratide hydrochloride and the dosing is about 500 - 1000 mg/m² at 1, 2, 3, or 4 week intervals.
21. A method of potentiating the effect of an anticancer therapy in a mammal, comprising administering a therapeutically effective amount of a GST-activated anticancer agent to the mammal being treated with the anticancer therapy.
22. The method of claim 21 where the mammal is a human.
23. The method of claim 21 or 22 where the GST-activated anticancer agent is canglustratide hydrochloride.
24. A pharmaceutical composition for anticancer therapy comprising a GST-activated anticancer compound, one or more of another anticancer chemotherapy agent, a molecular targeted therapy agent, and a biologic therapy agent, and an excipient.
25. The composition of claim 24 where the GST-activated anticancer agent is canglustratide hydrochloride.
26. A pharmaceutical product for anticancer therapy comprising a GST-activated anticancer compound, and one or more of another anticancer chemotherapy agent, a molecular targeted therapy agent, and a biologic therapy agent.
27. The product of claim 26 where the GST-activated anticancer agent is canglustratide hydrochloride.
28. A pharmaceutical kit for anticancer therapy comprising a GST-activated anticancer compound in dosage form and one or more of another anticancer chemotherapy agent, a molecular targeted therapy agent, and a biologic therapy agent, also in dosage form.
29. The kit of claim 28 where the GST-activated anticancer agent is canglustratide hydrochloride.

30. The kit of claim 28 or 29 where the dosage forms are packaged together in common outer packaging.
31. The use of a GST-activated anticancer compound and one or more of another anticancer chemotherapy agent, a molecular targeted therapy agent, and a biologic therapy agent, in the manufacture of a medicament for the treatment of cancer in a mammal.
32. The use of claim 28 where the GST-activated anticancer agent is canglustratide hydrochloride.
33. The use of a GST-activated anticancer compound in the manufacture of a medicament for the treatment of cancer in a mammal that is being treated with radiation therapy.
34. The use of claim 33 where the GST-activated anticancer agent is canglustratide hydrochloride.